

The Development of Physical Indicators of Children with Impaired Posture

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Abstract

The study studied the morphometric changes in body parts of 100 boys and 160 girls 8 years old with scoliosis (n=260) and compared with healthy children (n=300, 120 boys and 180 girls). It was established that scoliosis leads to violations of not only the functions of the musculoskeletal system, but also the development of negative shifts in anthropometric parameters.

Keywords: impaired posture, anthropometric parameters, scoliosis, Chest circumference, anthropometry, body length, body weight.

The relevance of the problem

Scoliosis is a persistent deformity of the spine characterized by its lateral curvature relative to the plane of the vertebral column. While 20% of cases of scoliosis can be attributed to neuromuscular, syndromic or congenital disorders, up to 80% of all scolioses are called "idiopathic" or of unknown etiology [1, 2]. The severity and prevalence of scoliosis in girls is higher than in boys [3,4]. According to the literature, it was found that girls with idiopathic scoliosis were generally taller and heavier than healthy children. In particular, it was found that girls with this disease were significantly taller and heavier at age 12, while boys with scoliosis were significantly taller at age 14 than their healthy peers [5, 6]. There is no objective data that determines the possible development of scoliosis in the early stages. There is no consensus on the early diagnosis and prevention of possible consequences of scoliosis, which justifies the need for research in this area.

The aim of the study

The goal of the study was to study the anthropometric parameters of children aged 8 years with scoliosis and to compare them with the anthropometric indicators of healthy children.

Materials and research methods

The research was conducted at secondary school No. 2 and boarding school No. 23 in Bukhara for children with scoliosis. The results of examination of 260 children (100 boys and 160 girls) aged 8 with idiopathic scoliosis of thoracic localization of I and III degree according to Chaklin were studied. All examined children were divided into 2 groups by simple randomization, comparable in

age, gender, and clinical and functional indicators. The control group consists of 300 healthy children (120 boys and 180 girls).

The results and discussion of the study

All examined children showed clinical and radiological signs of scoliosis, the direction of the thoracic scoliotic arch was right-sided or left-sided. Studies have shown that the height of 8 year old healthy male children ranges from 115,3 cm to 133,1 cm, with an average of $124,7 \pm 1,16$ cm. The body weight ranged from 18,4 kg to 39,0 kg, with an average of $25,3 \pm 1,30$ kg.

In a study of children with scoliosis, it was found that the height of 8 year old boys ranged from 116,2 cm to 130,3 cm, with an average of $120,4 \pm 0,87$ cm. The average body weight is $21,3 \pm 0,37$ kg (from 19,4 kg to 25,2 kg).

The height of 8 year old healthy girls ranged from 136 cm to 155 cm, on average it was equal to $140,7 \pm 1,18$ cm. The average body weight is $35,4 \pm 1,74$ kg (from 28 kg to 56 kg).

Studies have shown that the height of 8 year old girls with scoliosis ranges from 116,5 cm to 127,2 cm, with an average of $121,3 \pm 0,682$ cm. The body weight varied from 15,3 kg to 25,1 kg, with an average of $21,5 \pm 0,62$ kg.

During the research, it was found that in healthy boys of 8 years of age, the chest circumference in the pause ranges from 56.3 cm to 68.5 cm, with an average $61,0 \pm 0,74$ cm, at the height of inspiration from 53.2 cm to 72.1 cm, with an average $63,9 \pm 1,18$ cm, and at full exhalation from 55.5 cm to 68.0 cm, an average is $60,4 \pm 0,74$ cm.

Studies have shown that in 8-year-old male children with scoliosis, the chest circumference varied from 57.2 cm to 66.7 cm, with an average $61,5 \pm 0,56$ cm, at the height of inspiration from 60.1 cm to 71.0 cm, with an average $64,9 \pm 0,86$ cm, with full exhalation from 56.0 cm to 65.5 cm, with an average $60,6 \pm 0,56$ cm.

As a result of research, it was found that in 8-year-old healthy girls, the breast circumference in the pause ranges from 55.6 cm to 64.2 cm, with an average $58,8 \pm 0,56$ cm, at the height of inspiration from 57.2 cm to 66.4 cm, with an average $60,7 \pm 0,56$ cm, with a full exhalation from 54.4 cm to 62.2 cm, with an average $57,9 \pm 0,50$ cm.

In 8 - year-old girls with scoliosis, the breast circumference in the pause varies from 51.5 cm to 67.2 cm, with an average $62,0 \pm 0,99$ cm, at the height of inspiration from 53.1 cm to 70.0 cm, with an average $65,1 \pm 1,05$ cm, with full exhalation from 50.2 cm to 66.1 cm, with an average $61,0 \pm 1,99$ cm.

Anthropometric studies conducted among 8-year-old male and female children with scoliosis showed that the growth parameters of male children are 1.04 times, and those of female children are 1.01 times behind those of healthy children.

The breast circumference in pause in boys with scoliosis of 8 years of age is 1.01 times, and in girls of this age with scoliosis is 1.05 times more than in healthy children. The chest circumference at the height of inspiration in boys with scoliosis 8 years of age is 1.02 times, and in girls 1.07 times more than in healthy children of this age. Breast circumference at full exhalation in male children of 8 years of age with scoliosis is 1.0 times, and in girls it is 1.05 times more in comparison with healthy children.

Some authors claim that scoliosis occurs in 2-9% of children and adolescents under the age of 16, and the prevalence of this severe disease in school-age children reaches 15-30% or more [8, 9]. We also found that it is at the age of 8 that scoliosis begins to progress in children.

Discussion and Conclusion

Children with scoliosis lag behind their healthy peers in height and body weight. This is due to the fact that the bone system of children at this age is in the development stage, and scoliosis has a detrimental effect on the growth of parameters of physical development of the child. The breast circumference in pause, at the height of inspiration and at full exhalation in children with scoliosis is greater than the breast circumference of healthy children. Curvature of the vertebral column leads to an increase in the parameters of the chest circumference in all stages of respiration. Due to the pronounced curvature of the vertebral column, the chest is deformed, and this leads to a limited excursion of the chest during breathing in comparison with healthy children.

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